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Biological
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Serials

EDITED BY

A. K. HENRY, M.B., F.R.C.S.I.



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Original Communications.

—o—

THE RADICAL CURE OF INGUINAL HERNIÆ.

BY R. V. SLATTERY.

IN the *Lancet* of September 22nd, 1917, I published a short account of an operation for the radical cure of inguinal herniæ, in which I advocated a method of repair of the damaged fascial floor of the inguinal canal. With further experience of this operation I am more than ever convinced that repair of the innermost layer, *i.e.*, the floor of the inguinal canal should be the chief aim of all radical procedures for the cure of inguinal herniæ.

The damage to the fascial floor of the inguinal canal resulting from a hernial protrusion is well defined, and easily demonstrated. We must also consider the further damage due to operation. Thorough separation of the sac at the internal ring will increase the size of that ring—indeed it is no infrequent occurrence after ligation of the sac to find the deep epigastric vessels visible behind the structures of the cord, emphasising the extent of the damage. (See fig. 1.)

In addition, the transversalis muscle and fascia following the universal rule are now retracted high under the internal

oblique muscle. Is it not easy to understand in view of this weakening of the floor, and retraction of the transversalis muscle, that examination of the inguinal canal at this stage will give a false impression of the value of the fascial floor?

This operative damage to the inguinal canal accounts for the unusually large size of the internal ring in recurrent cases.

Contrasting a normal inguinal canal with one damaged by a hernial protrusion we find in the normal inguinal region, the fascial floor is well developed; it bridges the space between the transversalis muscle and Poupart's ligament; it is part of the extra-peritoneal fascial lining of the abdominal cavity. Half an inch above mid-Poupart is a small aperture in this fascia—"the internal abdominal ring." This aperture is normally situated under the supporting fibres of the internal oblique muscle.

During abdominal strain the transversalis muscle contracts, and owing to its insertion into the iliopectineal line, when it approximates to Poupart's ligament, it tends to overlap that ligament; the fascia transversalis is relaxed, and is supported by the strong muscular fibres of the internal oblique muscle, which is also approximated to Poupart. The external oblique gives additional support. The inguinal canal is, therefore, a valvular structure, and the main constituents of that valve are the fascial floor of the canal and the strong lower muscular fibres of the internal oblique which supports the fascia during strain. The efficiency of the protection afforded by this arrangement is evident, and in fact is granted by all who believe that a preformed sac is essential to the formation of an oblique inguinal hernia.

The pathological changes in the inguinal region which result from an oblique hernial protrusion are, briefly, as follows:—

1. There is a protrusion of peritoneum—the sac.
2. The internal abdominal ring enlarges in an inward and upward direction.
3. The transversalis muscle is displaced upwards.
4. The internal oblique, as a rule, is but little altered.
5. Later, the external abdominal ring enlarges.
6. The obliquity of the canal tends to disappear.

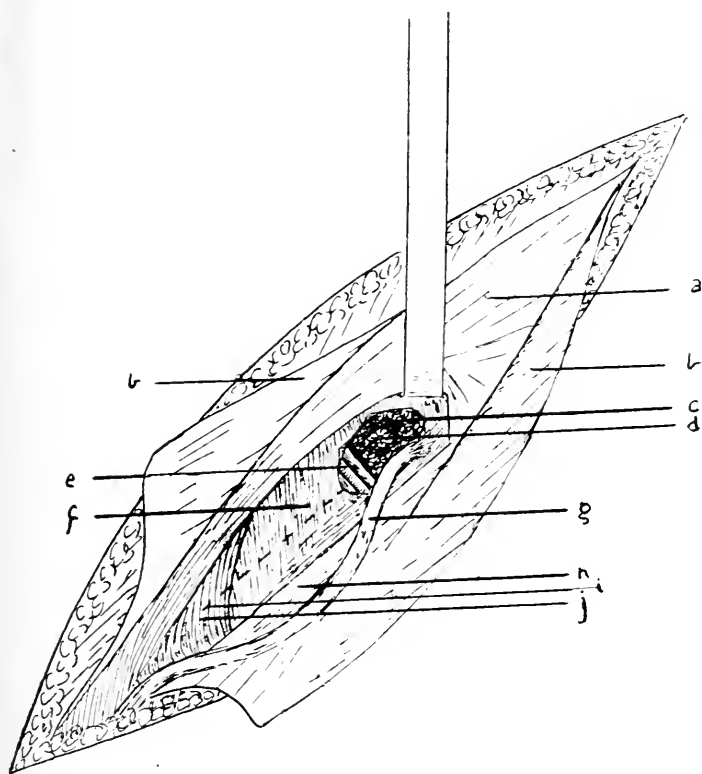


Fig. 1.

a, internal oblique; *b*, external oblique; *c*, opening in transversalis fascia produced by isolating the hernial sac; *d*, ligated neck of sac; *e*, inferior epigastric vessels; *f*, fascia transversalis; *g*, spermatic cord; *h*, inguinal (Poupart's) ligament; *i*, line of incision in fascia transversalis; *j*, falx aponeurotica inguinalis (conjoined tendon). This diagram shows the large internal ring left after complete separation of the sac.

Of all these changes enlargement of the internal abdominal ring is the most marked. It is rare to meet an internal abdominal ring in an oblique inguinal hernia which will not admit, with ease, two fingers. In old-standing cases, the internal ring is, of course, much larger.

The anatomical aim of the operation which I am about to describe is as follows :—

1. To reform the fascial floor of the inguinal canal.
2. To repair the damaged internal abdominal ring, leaving it where it is situated in a normal case under the supporting fibres of the internal oblique muscle.
3. To approximate the muscles inserted into the conjoined tendon to Poupart's ligament.
4. To restore the obliquity of the inguinal canal.

Approximation of the muscles inserted into the conjoined tendon by stitching the muscular fibres of the internal oblique to Poupart's ligament is not a procedure that recommends itself to me. I fail to see how permanent union can occur, and I have never seen evidence of such in a recurrent case. At best it can only serve as a temporary splint for the large internal abdominal ring, which lies beneath it unrepaired. In addition, such sutures tend to damage the muscular fibres of the internal oblique, a most important muscle.

Description of Operation.

The Trendelenburg position facilitates the operation, and, where possible, should be adopted.

1. The external oblique aponeurosis is exposed as in Bassini's operation. Before dividing it the anterior aspect of Poupart's ligament is exposed.

2. The external oblique is incised from the external ring to slightly beyond the internal ring.

3. The sac is freed from the surrounding fascias and cord *starting at the internal abdominal ring*. If small, the sac is ligated and removed: if large, or very adherent, the sac is ligated at the internal ring, and divided: the lower end is left.

4. The cord is freed from its bed, and retracted upwards, exposing the fascial floor of the inguinal canal.

5. The fascial floor of the inguinal canal is incised midway

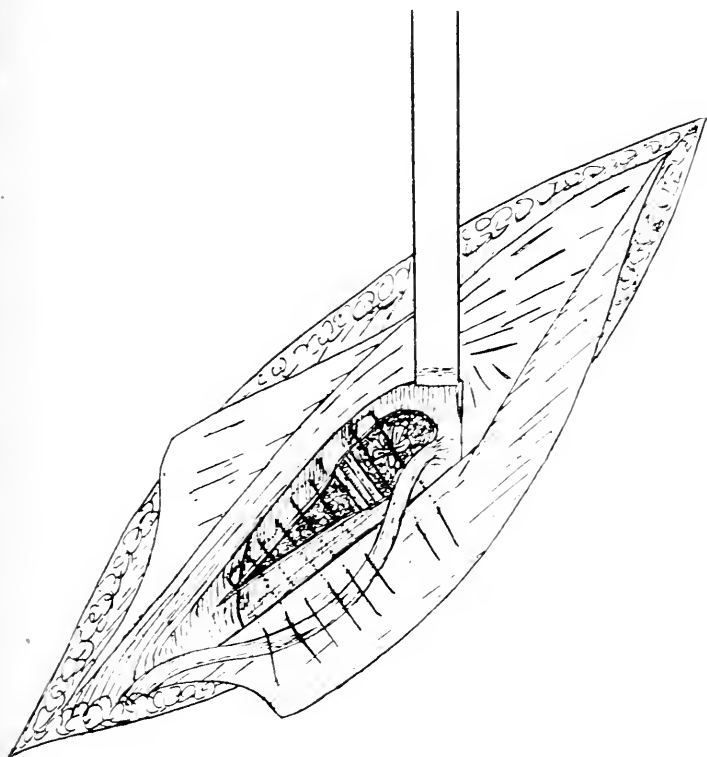


Fig. 2.

Suture of the fascia transversalis. The mattress sutures are represented as emerging on the deep aspect of the inguinal ligament for convenience of representation. The free ends, in the operation, are brought *through* the inguinal ligament and are tied on its *superficial* aspect. The medial suture includes the
conjoined tendon.

between Poupart's ligament and the structures of the conjoined tendon, care being taken not to damage the deep epigastric vessels. This incision is carried into the enlarged internal abdominal ring.

It is essential to thoroughly divide the fascia transversalis. This is accomplished when you reach the retroperitoneal fatty tissue, which, when the patient is Trendelenburged will fall away from the fascia transversalis bringing with it the deep epigastric vessels.

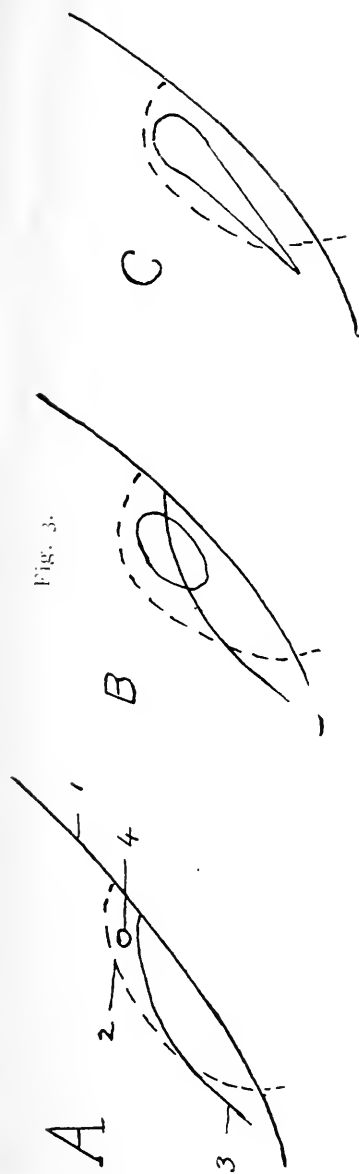
6. The fascia transversalis is freed gently from the retroperitoneal fatty tissue, both upwards under the conjoined tendon, and downwards to expose the deep aspect of Poupart's ligament.

7. The fleshy arch of the internal oblique muscle is retracted upwards, and tissue forceps are applied to the divided fascia transversalis beneath it. This fascia is drawn into the wound, and it brings with it the lower aponeurotic portion of the transversalis muscle. The lower flap of the transversalis fascia is drawn forwards with Poupart's ligament.

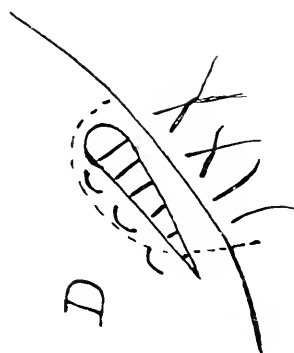
8. Mattress sutures—four generally suffice—are used to approximate the fused fascia and aponeurosis to the deep aspect of Poupart's ligament, the innermost suture being introduced first.

The aim of this suture is to unite the lower tendinous border of the transversalis muscle with its the attached transversalis fascia to Poupart's ligament. The next suture also unites to Poupart the fused tendinous lower border of the transversalis muscle and fascia. The two outer sutures unite strong fascia transversalis to Poupart's ligament. These sutures should be passed deep to the lower flap of the transversalis fascia, as it is important that this should not intervene between Poupart's ligament and the structures to be united to it. By carefully drawing Poupart's ligament forward, and passing the needle from within outwards to emerge where Poupart's ligament blends with the fascia lata of the thigh, these sutures are easily and safely introduced. When tying the mattress suture nearest the internal abdominal ring, care must be taken not to narrow that ring unduly. I have never seen pressure symptoms result even when the reformed ring will not admit the tip of a finger. When these sutures are tied

Fig. 3.



1. Inguinal ligament.
2. Edge of transversalis muscle.
3. Edge of internal oblique muscle.
4. Deep abdominal ring.



- A. Normal relations of edges of internal oblique and transversalis muscle to deep abdominal ring.
- B. Shows deep abdominal ring enlarged and upward displacement of edge of transversalis muscle.
- C. Shows incision in transversalis fascia.
- D. Shows mattress sutures in situ.

it will be seen that the internal oblique, as well as the transversalis muscle, are closely approximated to Poupart's ligament, and that there is a sound floor to the inguinal canal.

9. The cord is allowed to fall back into its bed.

10. The external oblique aponeurosis is stitched up, and the wound closed.

When the transversalis fascia is divided, examination of its inner surface, which is normally in contact with the retro-peritoneal fatty tissue, is instructive. The muscular belly of the rectus can be seen shining through its thin layer of fascia, below is the tendinous innermost layer of the transversalis muscle, and its attached fascia. When the transversalis fascia, now demonstrated, is held in a forceps, it will be quite easy to demonstrate that it is a strong structure, almost as strong as the post sheath of the rectus abdominis in its upper third. This little examination of the inside of the conjoined tendon gives the only true insight into the importance of the structures forming the floor of the inguinal canal.

For the operation just described, I claim the following advantages :—

1st. The normal anatomical structure of the inguinal canal is not altered ; the distance between the internal abdominal ring and the external is not diminished. The internal abdominal ring lies under the supporting muscular fibres of the internal oblique.

2nd. There is freedom from pressure on the cord with thorough repair of the internal abdominal ring, as the structures of the cord in that region are of very small bulk.

3rd. Convalescence is rapid.

I never give special instructions to refrain from work when the patients leave hospital, and I have not had, as far as I am aware, any cause for regrets.

4th. The operation is applicable to all oblique and direct herniæ.

I cannot now recollect a case where the internal ring was too large for repair by the method I have described. The muscles inserted into the conjoined tendon are left in the position that normally obtains during strain. A pillow under the thighs will relax the abdominal wall during convalescence.

Separation of a sliding hernia at the internal abdominal ring presents no difficulty when the transversalis fascia is incised. Separation from the structures of the cord is still a difficulty, but once the cord is free the fascial floor can be incised, the hernia freed from the internal ring and reduced, and the floor repaired in the way described.

Repair of a direct inguinal hernia by the method described is a simple operation, there is no adhesion to the structures of the cord. In the common variety, *i.e.*, the external direct hernia, the fascia transversalis is stretched and thinned by a hernial protrusion; it is rarely necessary to open or ligate the sac when freed from the thinned fascia, the peritoneum will fall into the abdominal cavity and being an elastic membrane will contract. The fused lower border of the transversalis fascia and muscle can then be sutured to Poupart's ligament, making a sound floor for the inguinal canal.

To complete this paper, apart from statistics which must come in a further contribution, I feel I must say a few words on recurrence, following operations for inguinal hernia.

Recurrence when the floor of the inguinal canal is not repaired depends on the patient's occupation. After the Bassini type of operation in a healthy patient leading a life in which he is not subject to *undue* strain, recurrence is rare, a tribute not to surgery but to the valvular structure of the inguinal canal. When such a patient is subject to strain, recurrence may come on 15 or 20 years after operation, as the unrepaired internal ring is even then a weak spot.

I remember an elderly American Serb, aged 45, whose case was of particular interest. 15 years before his admission to hospital, he had a Halsted operation performed with apparent success. After six months in the trenches a large direct hernia developed at the internal abdominal ring. Its cure presented no unusual difficulty. The cord was replaced in the inguinal canal.

Absence or deficiency of the conjoined tendon is a condition which I have never been able to demonstrate on thorough examination of a very large number of inguinal canals.

Retraction of the transversalis muscle simulates this condition.

In conclusion, I always regard the inguinal canal as a par-

ticularly strong part of the abdominal wall, whose repair presents no special difficulty if it is dealt with in the same thorough fashion as is usual in abdominal wall surgery, as for instance an umbilical protrusion. The peritoneum in the inguinal region requires the same treatment as peritoneum elsewhere. it must be supported by the extraperitoneal fascial lining of the abdominal cavity.

Since this was written, Mr. A. K. Henry has drawn my attention to two quotations from Poirier and Charpy's *Anatomy*, Vol. II., Part 1, 2nd Edition, 1901, which confirm important statements in my article.

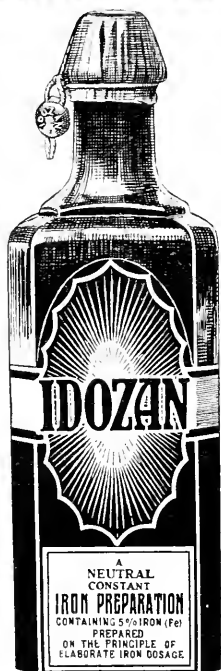
"It is the posterior wall of the inguinal canal which must be reconstituted in the radical cure of hernia" (p. 490).

"The structure of the transversalis fascia is readily seen when its deep surface is examined" (p. 483). "This fascial layer is especially condensed and tendinous in the inguinal region owing to abdominal pressure, which in the erect posture is at a maximum in this area" (p. 482).

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ACUTE LEUKAEMIA WITH CEREBRAL HÆMORRHAGE.*

BY THOMAS T. O'FARRELL.

THE following case is one which presents points of interest both from the clinical and pathological points of view. The symptoms exhibited by the patient were such as to render the diagnosis difficult during life, and even upon post-mortem examination the amount of investigation necessary to elucidate the case was by no means small.

The patient (Ref. No. 893-21-22), a young girl, aged 16 years, by occupation a children's nurse, first took ill on Monday, the 21st March, 1922, the main symptom being vomiting with slight headache. A careful investigation into her previous history revealed no outstanding feature, except for the fact that during the previous month she had had two rather severe uterine hæmorrhages, each of about a week's duration. Her menstrual history prior to this had been quite normal.

The next day, Tuesday, the 22nd, she went home and felt much better, she did not vomit, and was able to sit up in a chair to read. On Wednesday, the 23rd, she took ill again, vomited and felt very weak. That evening she was seen by Dr. Fagan, who found her temperature 101°F. and pulse 100. Examination of the lungs proved negative, but a certain amount of tenderness was elicited in the region of both ovaries. The patient was menstruating at the time. The urine contained a slight trace of albumen and was charged with urates. That evening she suffered from diarrhœa.

The next day, Thursday, the 24th, the patient was admitted to St. Vincent's hospital: her temperature was then 104°F. pulse 124, and respirations 32. The lungs still appeared to be normal, the abdomen was not tense and not tender, except over the ovarian regions; there was no rash or headache. Knee jerks were diminished. Kernig's and Babinski's signs were negative, and there was no general rigidity. The pupils were equal and reacting to light. One enlarged and freely mobile gland was found in the left posterior triangle of the neck, just above the clavicle. No other enlarged glands could be felt.

* Read before the Section of Pathology, R.A.M.I., 12th May, 1922.

All night, after admission, the patient was restless and vomited several times: she complained of sore throat and of pains all over the body.

On Friday morning, the 25th, she was seen by Dr. Meenan, when she presented the appearance of profound toxæmia; A small subcutaneous hæmorrhage was found on the front of the left shin.

On Friday evening a rectal examination was made by Dr. Barry, but no evidence of pelvic cellulitis was found.

The blood gave a negative Widal's reaction. That night the patient seemed easier, but her breathing was laboured and she passed urine involuntarily.

On Sunday the patient commenced to vomit again (everything except water): rectal salines were not retained; Quinine was administered hypodermically.

A blood culture proved negative, the flask remaining sterile for four days.

At 5.30 p.m. on Sunday evening, a pint of saline was given intravenously, some little time after the patient became distressed and her face cyanosed, on the administration of stimulants, this condition proved transitory, the colour returned to normal, and sweating commenced for the first time since admission to hospital.

At 8 o'clock p.m. the patient became delirious, passed her hand frequently over her head and tried to sit up in bed. At this time the heart presented a well marked tick-tack rhythm.

Later the patient passed clots of blood per vaginam and then relapsed into a profound coma, dying at 6 o'clock on Monday morning the 28th March.

All through her time in hospital the temperature was between 103° and 104° , at no time was there epistaxis, and while conscious no headache was mentioned by the patient.

Post-mortem Examination.

Upon superficial examination the subject was found to be well nourished, in fact there appeared to be rather an excessive amount of sub-cutaneous fat: the breasts were rather large. A small sub-cutaneous hæmorrhage was found on the front of each shin. No enlarged glands were felt, except the one in the posterior triangle of the neck. Petliculi were found in

the hair on the temporal region over the left ear. The pupils were moderately and evenly dilated.

Thorax.—Both lungs were spotted over by many petechial hæmorrhages. There was no persistent thymus. There was a small amount of moderately clear pericardial fluid. The pericardium showed fairly numerous petechial hæmorrhages. There was a certain amount of fatty infiltration, the heart muscle appeared normal but soft. Many sub-endocardial hæmorrhages were present. A small ante-mortem thrombus was found in the apex of the left ventricle, but there were no valvular lesions. On removing the thoracic viscera, no enlarged glands were observed, those at the bifurcation of the trachea being of about the usual size. The glands at the roots of the lungs were not enlarged.

Abdomen.—The peritoneal cavity contained a moderate amount of rather blood-stained fluid. There was a small petechial sub-serous hæmorrhage in Douglas' pouch. The abdominal viscera presented very little abnormality. It was particularly observed that the spleen was small and rather firm; a recent infarct was present. The stomach and intestines were normal and the mesenteric glands did not show any decided enlargement. The liver and pancreas did not present any abnormality. The left suprarenal was rather friable, but the right was removed intact. The kidneys were somewhat enlarged and a little congested. The lumen of the aorta was rather narrow. There were no enlarged lumbar glands. The pelvic viscera were removed 'en bloc,' and it was possible to demonstrate, by dissection, that there was no connection between the sub-serous hæmorrhage in Douglas' pouch and the uterine or vaginal cavities. To the naked eye the ovaries appeared normal. Culture tubes were inoculated from the heart's blood and spleen; these proved quite sterile.

Skull.—On removing the calvarium and opening the dura, the cerebro-spinal fluid did not appear to be under tension. The vessels on the surface of the brain were congested. During the removal of the brain a perforation occurred into what appeared to be a hæmorrhagic cyst in the under surface of the left frontal lobe. The cerebro-spinal fluid remaining in the trough of the skull was slightly opaque; it was thought advisable

to make a cultural examination, even though at that stage it could not be done under aseptic precautions. A mixed, sparse growth of streptococci and staphylococci, but no meningococci were obtained. The surface of the cerebellum was covered with sub-arachnoid petechial hæmorrhages.

On opening the left frontal lobe of the brain a large hæmorrhage was found, in extent it was three inches from before backwards, and two inches from above downwards. It was situated obliquely in the antero-lateral aspect of the lobe, limited in front by a thin shell of the left inferior frontal gyrus, was well walled off above by the marginal gyrus, below it had perforated on to the orbital surface; posteriorly it extended to the head of the caudate nucleus marginally and almost to the insula laterally. The hæmorrhage lay altogether within the vascular area supplied by the cortical branches of the anterior cerebral artery. The blood clot which was semi-fluid, contained what appeared to be ploughed up brain substance. It had somewhat the appearance of a mixture of blood and pus, cultures from this were sterile. A careful examination of the base of the skull was made, but no evidence of injury or disease could be found. The pituitary body was not removed but the pituitary fossa appeared to be of normal capacity when probed with the point of a knife.

In reviewing the case up to this point, the clinical history taken with the general naked eye appearances would lead one to a diagnosis of septicæmia, however, there was no source of infection discoverable, and the firm condition of the spleen was an unusual feature.

All the cultures made before and after death were negative, with the exception of those from the cerebro-spinal fluid, these however, were not reliable, as the material had not been collected aseptically. Material from practically every organ was removed for microscopical examination.

Attention was primarily directed to the examination of the brain and cerebellum, the sites of hæmorrhages being particularly selected. Under the low power these places appeared to be full of white cells, accordingly all tissues were submitted to Gram Weigert's stain; no micro-organisms could be found. It was evident from these preparations that the streptococci and staphylococci, obtained by culture, were of extraneous

origin, although, indeed, the former are an unusual source of contamination. Sections were then stained to demonstrate Gram-negative organisms, these were also negative.

New pieces of tissue were selected from the organs and subjected to Lavaditi's method. The examination of these was negative, but they revealed a rather interesting picture. In the case of the cerebral hæmorrhage the brain substance was so ploughed up that some of the nerve fibrils became detached, and resembled rather coarse spirochætes scattered throughout among the white blood cells, their true nature, however, was evident from an examination of the adjacent brain tissue. A more careful examination ~~was then made~~ of the hæmatoxylin and eosin preparations, with the oil-immersion lens, this revealed the fact that the white cells were not all polynuclears; in fact, that a very large number were mono-nucleated cells, these cells resembled myelocytes, though Leishman preparations failed to reveal granules. The blood vessels in all the organs gave the same picture, proving the case to be one of acute leukæmia. ~~†~~

It is, of course, evident at this stage, that the diagnosis could have been arrived at much earlier by a general blood examination; however, the case presented a "septic" appearance from the beginning, with practically no glandular enlargement, and no increase in the size of the spleen, so that attention was directed towards ascertaining the source of infection and the casual organism.

Unfortunately, a specimen of bone marrow was not obtainable when the true nature of the disease came to be recognised.

This type of leukæmia is, of course, well recognised in the text-books, but so far as I can remember no parallel case has been exhibited before this Section, consequently I thought it would be of interest to bring it before you.

I have to express my thanks to Dr. J. N. Meenan for his kindness in allowing me to bring forward the case, to Dr. Fagan for his very excellent clinical record and valuable assistance, and to Professor O'Sullivan for his kind interest during the investigation of the case.

NOTE.—The paper was illustrated by coloured microphotographs with naked-eye and microscopical preparations.

A CASE OF FACIO-HYPOGLOSSAL ANASTOMOSIS FOR FACIAL PALSY.

BY R. ATKINSON STONEY.

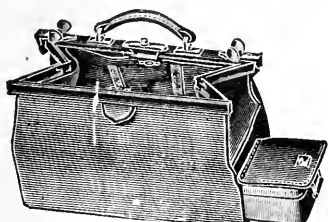
IN November, 1920, I was asked to see a nurse who was suffering from complete right facial paralysis, with a view to attempting cure by nerve anastomosis. The patient had been operated on some seven weeks previously for a chronic otitis media, at the operation the mastoid was found very dense and sclerosed and the antrum was very small. A small sequestrum was found in the tympanic cavity, and on its removal it was seen that $\frac{1}{2}$ inch of the facial nerve had come away with it. The operation was followed by complete right facial paralysis.

When I first saw the patient, who was about 25 years of age, the paralysis of the right side of the face was complete and the disfigurement was very marked, the right side of the face being quite expressionless, and the mouth drawn over to the left side in spite of the fact that she had been having massage and electrical treatment since the operation on her ear. The external scar of the operation was soundly healed, and the ear was dry and the hearing was good.

Having read the chapter on operative surgery of facial palsy in the second volume of Ballance's *Surgery of the Temporal Bone* (1919), I decided to anastomose the hypoglossal to the facial nerve and if possible the descendens hypoglossi to the distal end of the hypoglossal.

On November 17th the patient was anaesthetised with ether, and an incision made from behind the right ear along the anterior border of the sternomastoid muscle to the level of the thyroid cartilage. The muscle was freed and the external jugular vein was divided. The great auricular nerve crossed the wound obliquely, and as it was in the way it was divided. The wound was deepened along the anterior border of the sternomastoid and the mastoid process with the insertion of this muscle were defined. A second incision was now made horizontally forwards, from the centre of the original incision

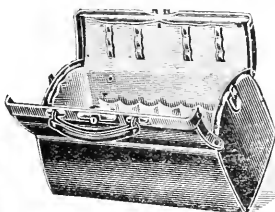
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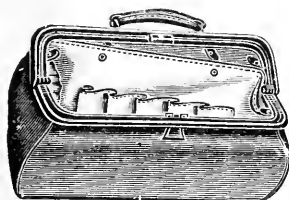
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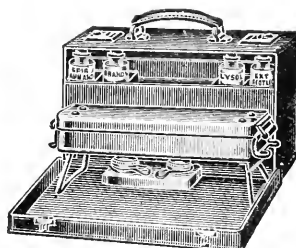
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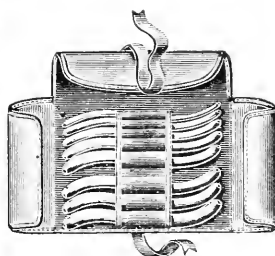
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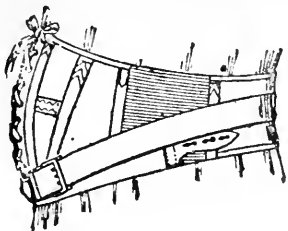


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towards the hyoid bone for one and a half inches. The posterior belly of the digastric was exposed up to the mastoid process, the parotid gland was drawn forwards and the base of the mastoid process was cleared. The posterior part of the parotid gland was then teased, and the facial nerve in this way was easily found and was traced backwards to the stylo-mastoid foramen and forwards into the substance of the parotid. It was then divided close up to the foramen with a tenotome, and a fine silk suture was passed through it. The hypoglossal nerve was easily found behind the posterior belly of the digastric, and the occipital artery in close relation to it was tied and divided. The nerve was traced down to its branch to the thyro-hyoid and was divided immediately above this, it was then cleaned upwards and the cut end was passed under the posterior belly of the digastric and united to the distal end of the facial with three sutures of No. 00 silk on a very small curved non-cutting needle, these sutures passing through the sheaths of the nerves only. There was no tension on the sutures. Search was now made for the descendens hypoglossi and it was found and divided a short distance above the anterior belly of the omo-hyoid and its proximal end was united by a single transfixion suture of No. 00 silk to the distal end of the hypoglossal nerve. The capsule of the parotid was sutured to the sterno-mastoid muscle. The deep fascia and the platysma were sutured, and the divided ends of the great auricular nerve were united by a couple of points of fine suture, and the wound was closed without drainage with Michel's clips. The operation took one hour and forty minutes. Healing was by first intention.

The day after the operation the patient expressed her delight both to me and to the sister, because she said she was able to close her eye better, but neither of us could notice any definite change. Massage and electrical treatment were started at the end of a week, and the patient left the nursing home at the end of three weeks, and returned to the country with an electric battery and full instructions how to work it and to exercise her facial muscles. When she left the home there was no noticeable atrophy of the tongue, and its movements appeared normal.

The patient was seen in May of the following year, just six

months after the operation. In repose the difference between the two sides of the face was not very noticeable, the patient could nearly close the right eye, the tongue was protruded straight and there was no appreciable atrophy. There was still marked asymmetry of the face when the patient smiled or talked.

The patient was not seen again, but in March, 1922, sixteen months after the operation, a letter was written and several questions asked; the replies were as follows: "Face is quite normal in repose. Can move the muscles of the right side much better than I did even a few months ago, cannot quite close eye yet, but can shew teeth better. When talking or laughing both sides of the face are not yet alike, but have improved considerably. The difference being noticeable only by those who knew me before the operation. The tongue feels quite 'normal' except when putting it out suddenly, it inclines to right side. I am still using the battery and massage the face a good deal."

I have described the steps of the operation at length as the descriptions, even in the larger books on operative surgery and treatment, are distinctly sketchy, some of them even farcical, *i.e.*, the suggestion to plunge a hook between the parotid and the mastoid process and pull up the facial nerve on it! The best description I found was in Ballance's *Surgery of the Temporal Bone*, but even this was rather meagre; he states that "the procedure is simple and presents no difficulty." The main difficulty of the operation is of course to find the facial nerve. The chief steps in overcoming this difficulty are to expose the base of the mastoid process thoroughly, clear the posterior surface of the parotid gland and clean and dry the space between the two. If the nerve is not found at once, tease the lobules of the posterior surface of the parotid gland taking care to keep the edge of the knife horizontal, in this way either the stem of the nerve or one of the main branches will be quickly found, and the nerve can be traced back to its foramen. The rest of the operation merely requires a certain amount of delicacy of touch and attention to details.

This was undoubtedly a favourable case, a young person with a recent injury, treated carefully both before and after

operation. And the result has been correspondingly good, probably as good as can be expected from anastomosis of these two nerves. Both sides of the face are symmetrical at rest, there is very fair voluntary movement of the muscles, but there is a lasting asymmetry of the face with emotional movements, though the disfigurement caused by this is slight in comparison with the masklike immobility of the paralysed side of the face before operation. Gibson in his paper in *Surgery, Gynecology and Obstetrics*, November, 1921, says, that there are three degrees of cure. 1. Restoration of normal muscle tone, the recovery of which alone makes the operation well worth while. 2. Voluntary control of the individual muscles. 3. Complete and perfect recovery *i.e.*, return of expressional movements.

The advantage of early operation is well shown by contrasting the results in the series of cases collected by Zesas and those collected Rothschild. In the former's paper published in 1914 there were 73 cases of chronic facial paralysis submitted to nerve anastomosis and the results were disappointing, no benefit resulting in half of the cases. In Rothschild's paper published in 1911, there were 188 cases with details of 68. Eight showed complete restitution, the results in the majority were fair, and only one was a complete failure. Here, as elsewhere, in nerve anastomosis the best results will be obtained by early operation, before permanent changes have occurred in the distal portion of the nerve, and degeneration has taken place in the muscles.

The first suggestion of making use of the descendens hypoglossi in this operation was a case reported by Grant in 1910. Facial paralysis resulted from a pistol wound of the ear. The facial nerve was stitched to the spinal accessory and the distal end of the nerve was stitched to the proximal end of the divided descendens hypoglossi. But it was Ballance who suggested that the proximal end of the descendens should be united to the distal end of the hypoglossal, and a case is reported in which he did this operation in 1913 with very satisfactory results. Although the hemi-atrophy of the tongue resulting from the section of the hypoglossal does not cause any serious inconvenience, still the second anastomosis does not add much to the length or difficulty of the operation; and in this case

there was certainly no atrophy of the tongue observed at any time, and paralysis of the tongue was never a noticeable feature, and at the time of the last report the tongue was practically normal.

The first hypoglossal anastomosis was performed by Körte, December 20th, 1901. The case a year later showed moderate improvement, the face was still paretic, but the patient was able to raise and depress the angle of the mouth, and to contract the orbicularis; the left half of the tongue was atrophic, but the tongue could be moved in all directions; associated movements of the tongue occurred when the left half of the face was moved, and *vice versa*. Before this the spinal accessory had been used for the anastomosis. Now, however, it is generally recognised that the objections to its use more than make up for the slightly greater ease of the operation. The paralysis of the shoulder muscles is more serious than that of half the tongue, the associated movements of the face and shoulder are more noticeable and inconvenient than associated movements of the tongue and face. The fact that the cortical centres of the hypoglossal and facial are so closely situated, and that movements of the face and tongue are both so intimately associated in expression, suggests that the return of expressional movements will be more likely to occur after facio-hypoglossal than after facio-accessory anastomosis.

When one considers the appalling disfigurement in a case of complete unilateral facial palsy, specially in a woman, it seems curious that the operation of anastomosis is not more frequently performed; and I would suggest that in every case of facial palsy from whatever cause, which has lasted without improvement for six months, the question of anastomosis should be seriously considered, and that in cases where the nerve is known to have been divided, as during the radical mastoid operation, an anastomosis should be performed as soon as possible, after the field of operation on the ear has healed, and the danger of wound infection has passed away. By this means many people will be saved from a life of misery, and their disfigurement will cease to be an offence to others as well as to themselves.

A NEW PELVIMETER.

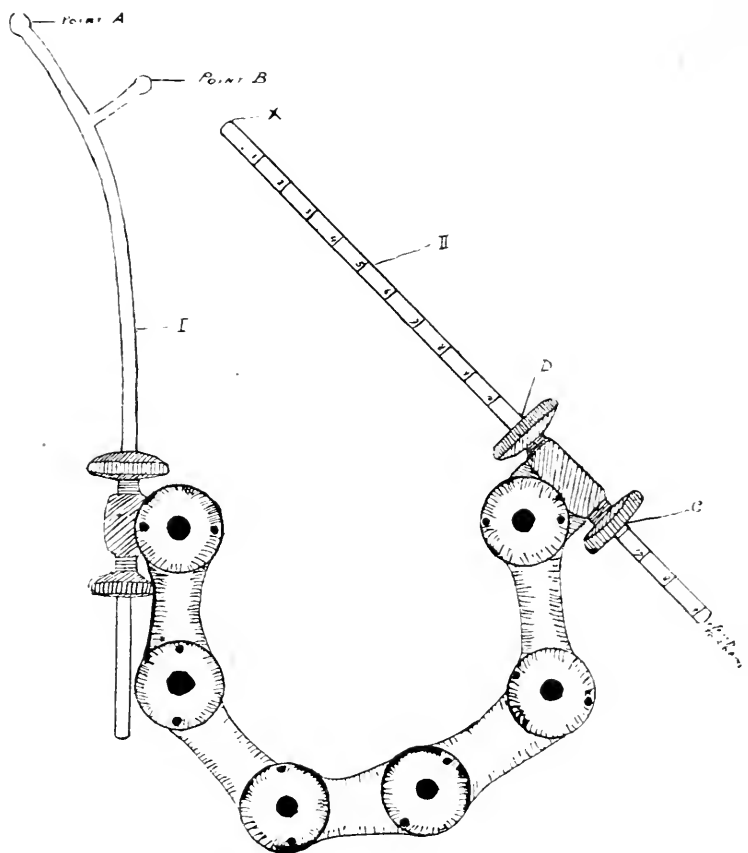
BY R. E. TOTTENHAM.

WHEN in the Rotunda hospital, Dr. Hastings Tweedy, the then acting Master, suggested to me, that if a pelvimeter could be made somewhat after the plan of the instrument a shoemaker uses for measuring the length of a shoe, it would possess many advantages over the existing instruments. such as the Skutsch, and would not be liable to the errors due to vibration, etc., which may occur with the latter instrument.

I spent some little time working at this idea, and constructed a rough model in wood. and finding this model among my things on returning from the war. I had it copied in metal, but with the resulting instrument I was far from being satisfied.

Mr. A. K. Henry in talking it over with me. very kindly mentioned Mr. Haines, of 14 Ashfield Park. Terenure, who is a model engineer : and it is largely due to Mr. Haines' engineering skill and workmanship. that the present instrument has been turned out.

It is composed of a series of hinged links (5). each link being about three inches long, and somewhat flattened from side to side. The terminal link at each end is armed with an adjustable head. the latter in each case being drilled so as to carry a rod. The rod in one case being about 13 inches long, slightly curved at one end which terminates in a ball point. At *exactly 7 cms.* from this ball point, there is a second ball point ; the object of having this latter is. that it also can be used to measure from. thus obviating the necessity of having to remove the rod from the vagina. in order to reverse it (as in the case of a Skutsch's instrument), when measuring the conjugate, thus reducing the number of times the instrument is pushed over the vulva. and also saving time. The other head carries a straight rod, graduated in centimetres up to 35 : this rod moves freely to and fro, and is pushed down to the skin, in a like manner to the way in which the lead leg in Skutsch's instrument is manipulated. The advantage of the numerous joints is, that the instrument can be made to assume almost any shape, in the one plane. It will fit readily into most sterilisers, and can be carried about the person. It can be used for either internal or external pelvimetry, and a direct



I. Curved rod. II. Calibrating rod.

In order to calibrate, the end X of the straight rod must be brought into contact with point B, then read off the distance to the nearest centimetre at C. (D can be used to read from if more convenient.)

reading obtained in both cases. It is very light, being made of duralium, in consequence, no soda must be used in the water in which it is boiled.

A simple curved rod carrying only the terminal ball point is also provided, and a key for tightening the nuts.

Measurement of the Conjugate Diameter.

When it is desired to measure the conjugate :—

(1). Fix the instrument in the position shown in Fig. 2, p. 412, pushing up the calibrating rod to the ball point B ; read off the distance at C. Suppose it is 25 cms., we then know that point B is 25 cms. from C. As point A is exactly 7 cms. from B, therefore A is $(25 + 7) = 32$ cms. from C.

(2). A vaginal examination is now made and the promontory of the sacrum located : the curved rod is introduced, and point A applied to the promontory. The calibrating rod is now adjusted so that the tip just dimples the skin over the front of the pubes, at about its middle. (It is necessary to mark this point with a pencil before the reading is taken, as it is essential to return to the same spot in subsequent measurements.)

The reading is again taken at C, suppose it be 18 cms. From A to C was 32 cms., therefore $32-18$, represents the distance from the skin over the front of the pubes, to the promontory of the sacrum. *Vide* Fig. 3.

It is now required to find the thickness of the pubes.

(3). Without removing the curved rod from the vagina, bring ball point B on to the back of the pubes, at a point corresponding to that marked on the front ; adjust calibrating rod as before (*vide* Fig. 4). Take the reading at C : suppose it to be 21 cms., we know that the distance from B to C is 25 cms., therefore $25-21$ represents the thickness of the pubes—4 cms.

We are now in possession of the fact, that from the skin to the promontory is 14 cms., and that the thickness of the pubes is 4 cms., therefore the conjugate is 10 cms.

Measurement of the Transverse Diameter.

In order to measure the transverse diameter, locate a point on the pelvic brim, which appears to be the most distant from the opposite side, place the ball point A on this spot, keeping it in contact with the fingers in the vagina, the calibrating rod

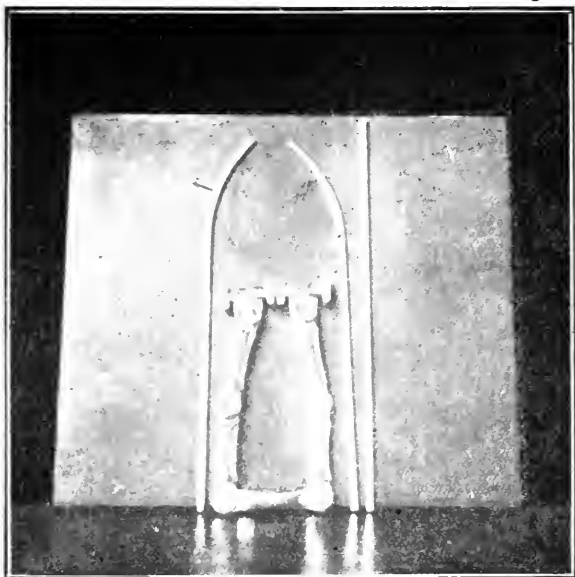


Fig. 1.—The instrument folded so as to fit in steriliser.

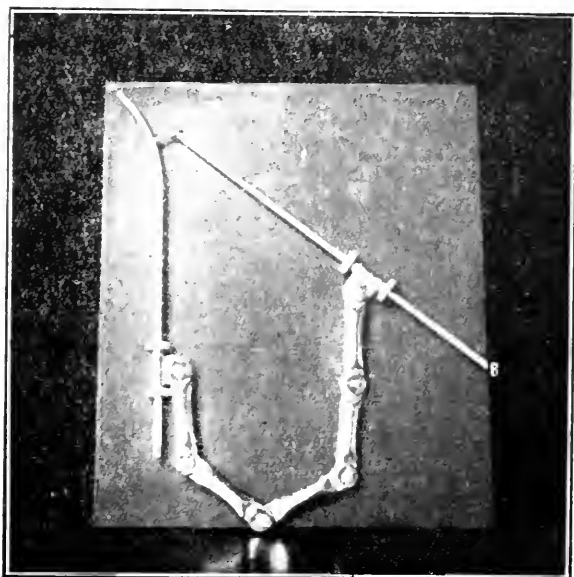


Fig. 2.—Ready for use. The shape is suitable for conjugate; the end of the straight rod is touching B.

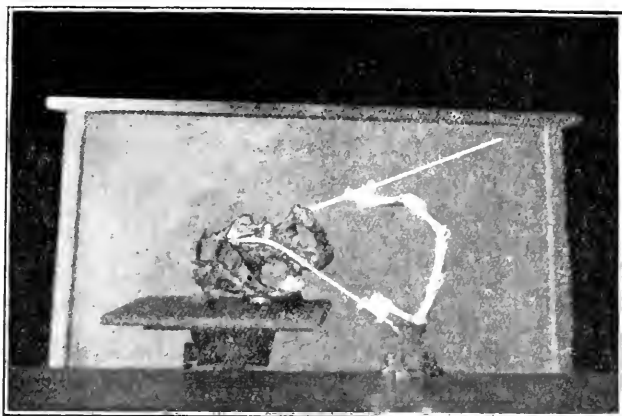


Fig. 3.—Measuring the conjugate. Point A is on the promontory, and the end of straight rod on the pubes.

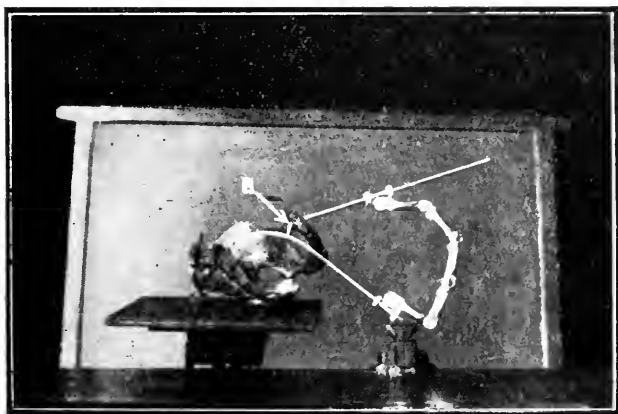


Fig. 4.—Measuring the conjugate. Point B is on the back of the pubes and the end X of the straight rod applied to the front.

is adjusted to a mark which has been made over the opposite great trochanter, and the reading taken : let it be X . (Fig. 5.) If the distance from A to C be not already known, obtain it, let it be Y . Therefore $X-Y$ equals the distance from the skin over the great trochanter, to the far extremity of the transverse diameter.

(It is usually necessary to alter the shape of the instrument a little from that in which the conjugate was taken).

Unfortunately for anatomical reasons it may be necessary to withdraw the curved rod from the vagina, and reverse it so that point A is nearest to C . Obtain the distance from A to C , suppose it be W .

Again insert the curved rod into the vagina, applying point A to the near end of the transverse, and adjust the calibrating rod to the point over the great trochanter ; take the reading ; suppose it be Z , therefore, $W-Z$, is the distance from the near end of the transverse to the skin (*i.e.*, the thickness of the tissues). Fig. 6.

We are now in possession of the fact that from the far end of the transverse to the skin is $X-Y$, and from the near end is $W-Z$: the difference between these two numbers is the transverse.

Thus if the distance $A-C$ (Y) be 33 cms., and the reading X be 10 cms., the first measurement obtained is $33-10=23$ cms.

In the second measurement the distance from A to C was 23 cms. (W).

The reading Z was 13 cms., therefore the thickness of the tissues was $23-13=10$ cms. Therefore the transverse is 13 cms.

In the case of the external measurements the procedure is equally simple.

Thus, suppose we wish to measure the interspinous diameter. Point A is rotated to face the calibrating rod, the instrument is shaped so as to form the arc of as large a circle as possible, the calibrating rod is brought into line with A , and pushed up until it meets this point, and the reading at C taken : suppose it be 34 cms.

Point A is now placed on one Anterior Superior Spine, and the tip of the calibrating rod on the other : the second reading is now taken ; let it be 8 cms. Therefore, $34-8=$ the interspinous diameter. (Fig. 7).

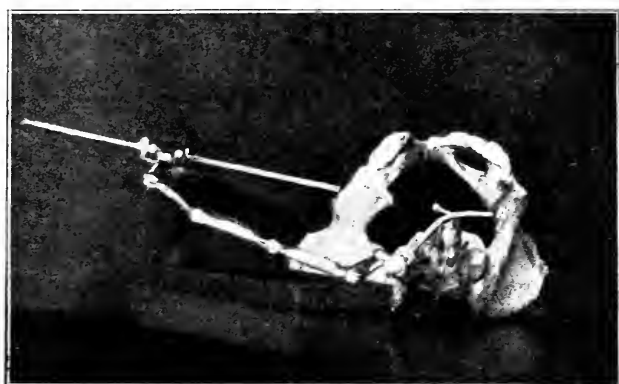


Fig. 5.—Measuring the transverse. Point A is applied to the far end of this diameter, end X of the straight rod is supposed to be on a point over the great trochanter.

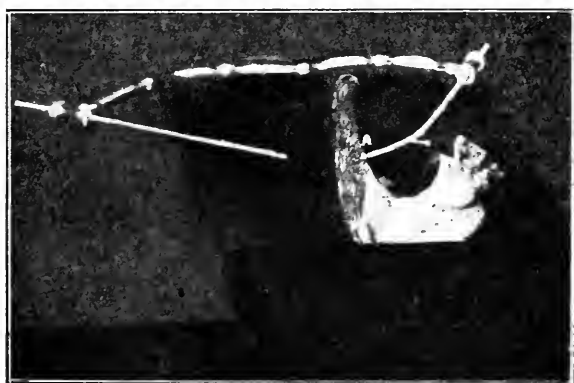


Fig. 6.—Measuring the transverse. Point A is on the near end of this diameter, and the straight rod applied over the great trochanter as before.

In arranging the instrument for calibration, before any measurement ; if point A be turned away from C, then the calibrating rod, together with points B. and A, must all be in the same straight line, that is, if this straight rod were produced it should pass through both point B and point A.

When A is turned to face C, then the straight rod must be touching the tip of A when the reading is taken.

If the second curved rod be used, when the end is turned away from C, then in calibrating, the straight rod must be pushed along until it is beside, and level with A.

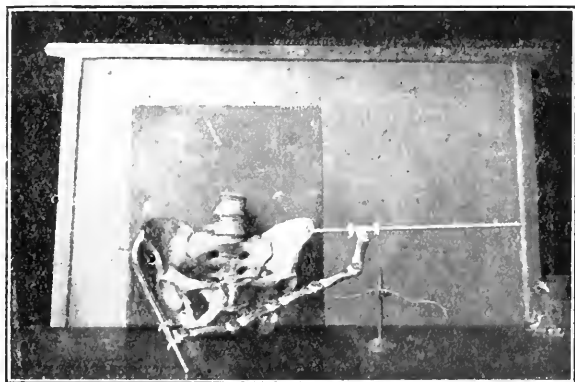


Fig. 7.—Measuring the interspinous distance. Point A is on the right ant. superior spine, the end of the straight rod on the other.

It is well to have all the joints fairly stiff, and the nuts holding the curved rod should be sufficiently tight to prevent the latter rotating. The straight rod of course must be free to move easily to and fro.

I claim that this instrument is a great improvement on any of the existing instruments that I am familiar with ; measurements can be accurately and simply taken by direct reading.

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I regret that in Figs. 5, 6, 7, the points of the instrument are not applied to the exact anatomical positions indicated in the text, there was considerable difficulty in maintaining the desired position, and further, in the case of Figs. 5, 6, the position that the great trochanter would occupy, could only be roughly indicated.

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BOOKS.

THIS MONTH'S SPECIAL REVIEWS.

Infections of the Hand. BY ALLEN B. KANAVEL, M.D.
4th Edition. Lea and Febiger. Price 5 dollars 50.

THE fourth edition of Professor Kanavel's book is a volume of some five hundred pages, well illustrated and with good clear print. The arrangement of the subject matter follows that of previous editions, but a feature of the present volume is the introduction of a chapter each on gas bacilli, streptococcal infections, and the restoration of function in infected hands. The book shows evidence of much patient study, and no pains have been spared to bring it thoroughly up-to-date as regards modern views of ætiology and treatment of the various infections of the hand.

Chapter five on "Diagnosis in General," and chapter six on "The General Principles of Treatment" are worthy of careful perusal. In chapter seven the author explains, how, finding the description of the anatomy of the hand as given in text books altogether inadequate for the proper understanding of the various septic conditions affecting it, he set himself to inject a series of hands in the cadaver. The ensuing three chapters are devoted to a detailed description of his experiments, and the conclusions drawn therefrom. While much that is said about the different fascial planes and their relations to surrounding structures will be new, and perhaps somewhat puzzling to the average reader, a reference to the many excellent diagrams of cross sections will greatly facilitate a clear understanding of the points emphasised by the author. The remaining chapters deal with the details of diagnosis and treatment.

An Introduction to Dermatology. By NORMAN WALKER, LL.D., M.D., F.R.C.P. 7th Edition. Pp. 366, with 84 Plates and 80 Illustrations. Price 21s. Publishers: W. Green and Son, Edinburgh, 1922.

WE welcome the appearance of the seventh edition of this well-known work. It is always a pleasure to meet with such

a book on diseases of the skin which is moderate in both price and size. There are 84 good plates most of which are in colours. The printing is good, and we have noticed no misprints. The style is clear, concise, and most readable.

We would offer two criticisms of the work. In the first place syphilis is dismissed too briefly, only seven pages being allotted to it, whilst six pages are devoted to a disease such as leprosy. The second criticism which we would make is as regards eczema. Norman Walker discards the term "eczema" as being out of date and merely a cloak for ignorance, and puts it under the non-committal title of "dermatitis." Whilst there is a good deal of truth in his contentions he appears to be too sweeping in his treatment of the subject, and not to devote sufficient attention to the disease itself call it what one will.

On the whole the book is excellent, and is one of the best of its kind. V.M.S.

The Early Diagnosis of the Acute Abdomen. By ZACHARY COPE, F.R.C.S.E. Oxford Medical Publications. Henry Frowde and Hodder and Stoughton, London, 1922. Pp. xv. + 223.

THERE is a tendency to regard the acute abdomen as a bag to be opened. Diagnosis of the causal lesion is often at fault, and often with experience, is not attempted.

As a corrective this book is excellent; it is clearly printed; it is short, and the style is terse. Simple diagrams illustrate tests which the author has found valuable. Stress is laid upon the part that hitherto unexploited muscles of the abdomen such as the obturator internus and the psoas may be made to play in locating a lesion. The "obturator" test was first described by Mr. Cope in 1921.

The "form for acute abdominal cases" indicating all the essential details of the routine examination of an acute abdomen, permits an adequate resumé of the case to be made rapidly, and prevents capital omissions. This form makes for precision, and its use should bring the day nearer when mistaken diagnosis in these conditions will be exceptional. The note of personal experience throughout the book makes it of particular value.

A Practical Treatise on Diseases of the Skin, for the use of Students and Practitioners. By O. S. ORMSBY, M.D. 2nd Edition. Pp. 1,166, with 445 Engravings and 4 coloured Plates. Price 10 Dollars. Lea and Febiger, Philadelphia, and New York, 1921.

THIS work is well bound, clearly printed, and is free from misprints. The information is up-to-date and thorough, but the style is somewhat heavy. There are copious illustrations, and four coloured plates. The illustrations are for the most part good; the coloured plates are poor. Though the work is entitled "a treatise for students and practitioners" there are very few students who would have the time or inclination to embark on a tome of eleven hundred pages of heavy dermatological information. On the other hand, the book falls short of the requirements of an exhaustive treatise on diseases of the skin suitable for reference purposes. V.M.S.

The Dictionary of Practical Medicine. 3 Vols., Crown 4to. Edited by SIR MALCOLM MORRIS, FREDERICK LANGMEAD, and GORDON M. HOLMES. Cassell and Co., London. Pp. 1,796.

THE emphasis in this *Dictionary* is laid, as its title suggests, upon the word "practical" but etiology, pathology, symptomatology, prognosis, are also sufficiently dealt with. There is a good summary of the physiology of the nervous system.

The work is illustrated with 12 excellent coloured plates, 36 half-tone plates, and 109 figures in the text. Major operations, very properly, are not described in detail, nor are the management of labour, and the treatment of fractures and dislocations. These are subjects which would be misplaced in a work of this kind.

The descriptions are lucid and are everywhere the work of men specially qualified to deal with the subjects entrusted to them. Among the many contributors we note the names of two Dublin physicians, Dr. T. G. Moorhead and Dr. F. C. Purser.

This work can be confidently recommended as a convenient, practical, and essentially modern guide to general medicine.

Textbook of Pathology. By A. STENGEL and H. FOX. Pub. : W. B. Saunders and Co. Seventh Edition, 1921. Pp. 1,111 with 509 Illustrations and 15 coloured plates.

THIS well-known work now reaches its seventh edition. It is a very complete and systematically arranged textbook of pathology. The illustrations are numerous and are on the whole very good, but a few of them are too dark and indistinct.

The information supplied is accurate and up-to-date except for the articles on endometritis and gas gangrene which require revision.

Misprints are few, and the seventh edition, with its added illustrations and the incorporation of new matter in the text, ably maintains the reputation of the work as one of the leading textbooks of pathology.

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ABSTRACTS OF CURRENT LITERATURE.

SOME RECENT PUBLICATIONS ON GALLBLADDER SURGERY

ABSTRACTED BY WILLIAM DOOLIN.

HARTMANN AND P. DUTAILLIS (Paris.) : *End Results of Cholecystectomy*
"Jour. de Chir." Oct. 1922, p. 351-357.

IN a post-operative study of 100 patients who had undergone cholecystectomy, the following observations were made: 80 were undertaken for stone, 20 for inflammation without stone; these patients have been followed up for periods varying from one to twenty years. In 54 cases, the results were absolutely satisfactory, and have remained permanently so. Thirty-four of the remainder, while remaining in good health, and being quite satisfied with the operative result, present certain minor after-troubles, either digestive (*i.e.* diarrhoea, eructations, post-meal headache, very rarely vomiting) or painful sensations in the operative area; in nine of these latter, the painful attacks simulated a sub-acute colic without jaundice; in four, the pain seemed rather of pancreatic type, radiating transversely to the left ribs. In three cases only were genuine crises of hepatic colic observed, in which pain was accompanied by light jaundice and vomiting. Four of the patients subsequently suffered from serious adhesion formation between the inferior hepatic surface and duodenum or colon, all verified by *x*-ray. Two patients subsequently succumbed to a cancer of the biliary tract, one eight months, the other four and a half years, after cholecystectomy.

A special comparison was made of the operative findings with the post-operative course. In general, no very great difference was found in the after-history of those operated for simple chronic cholecystitis or those operated for acute suppurative conditions. The patients mentioned as suffering from genuine hepatic colic subsequent to operation, were all operated for an acute suppurative cholecystitis, and Hartmann poses the question as to whether the return of the painful crises might not be due to a reactivation of latent sepsis in the biliary tract? (One of these patients had to have a stone subsequently removed from the choledochus). Adhesion-formation seemed to follow only the chronic cases. Digestive (minor) troubles were found post-operatively only in cases of multiple gallstone formation: none were complained of in patients who at operation had either no stone or only single stone.

In summary, H. looks on 92 of the 100 cases analysed as permanent cures; of these, some needed dietetic treatment for some time after

operation. He emphasises specially the advisability of inspecting the appendix at the same time: in five of his cases, a previous appendicectomy had failed to relieve symptoms; in six, a diseased appendix was removed with the gallbladder; in two, subsequent appendicectomy was necessary. The bile ducts should always be probed before closing the abdomen. Secondary operations for adhesion-formation are rarely necessary (two cases).

Post-operative medical treatment for hepatic insufficiency is necessary in most cases.

HINZ: *End Results of Cholecystectomy*. Archiv. f. Klin. Chir. 1921. cxvii. 106-137.

H. carries out cholecystectomy always for stone. 98 such cases operated between 1914-1920. Bevan type incision for choice. Nine patients died: mortality would be lower if patients were sent earlier; of the remaining 89, 41 were chronic calculous, 48 were acute cholecystitis. Fifty-seven patients returned for re-examination. Post-operative trouble was complained of in twenty-four cases, mostly at site of scar, less frequently digestive. Thirty-three cases had no post-operative trouble whatsoever. Radioscopy shows that perigastric post-operative adhesions follow much more frequently the chronic cases.

CUTLER AND NEWTON (Boston.): *Metzler-Lyon Test in Gallbladder Disease*. (Surg. Gyn. Obstet. Aug., 1922. 146).

THE authors, as a result of numerous observations, conclude that this test cannot be depended on for diagnostic purposes, even when accurately performed.

SHERREN (London): *Comparison of Cholecystosotomy and Cholecystectomy*. "Brit. Jour. Surg." July, 1922. p. 135.

TEN years ago, in 100 consecutive operations for gallstones, S. considered cholecystectomy necessary in 29. In his last 100 cases, he carried it out primarily in 94; the other six were acute cases in which it was unwise for various reasons to make the attempt, and in two of these, the gallbladder was removed at a second operation some weeks later. This change in practice has been forced on the author by experience. Cholecystectomy should be the treatment in all surgical diseases of the gallbladder, either as a primary procedure, or, in two stages where the risk to life or the common duct is great; a two-stage cholecystectomy is infinitely preferable to a plastic operation on the common duct.

Analysing his cases of gallstones confined to the gallbladder, and operated on prior to 1918, S. carried out 184 cholecystectomies, with six deaths. There has been no recurrence of symptoms in any of these

cases. Of 152 cholecystostomies, four died, and 29 patients (19 per cent.) have had recurrence of gallbladder symptoms, of whom 18 were re-operated; in 15 of these, stones had reformed; in three, there was chronic cholecystitis, without stone; none had stones in the common duct at the second operation. In addition to these recurrences, five other patients died within four years of cholecystostomy of biliary cancer. Thus, in 34 out of 148 survivors of cholecystostomy, the result was unsuccessful after a period of years.

Sherren concludes that the correct treatment of gallbladder diseases, including in that term gallstones, is cholecystectomy, although in certain cases, drainage may be necessary as a temporary measure.

BARLING (Birmingham): *Recurrence of Gallstones*. "Brit. Jour. Surg." Oct., 1921. p. 223.

OF 53 cholecystectomies, one died. Three have had symptoms suggesting further formation of stones in the common duct; two were proved by operation. Removal of the gallbladder, therefore, does not prevent recurrence of stone in the common duct, but B. sees no reason to believe that it adds to the likelihood of recurrence.

DEAVER (Philadelphia): *Recurrent Cholecystitis*. ("Surg. Clin. N. Amer." Feb., 1922)

D. gives the following as causes for the recurrence of symptoms after gallstone operations:—

- 1.—Persistence of infection in gallbladder wall. (Interstitial cholecystitis).
- 2.—Stones in hepatic duct escaping detection at original operation.
- 3.—Adhesions (more common after cholecystectomy).
- 4.—Re-infection of biliary passages.
- 5.—A latent hepatitis and cholangitis may produce a return of symptoms from two to ten years after the primary operation.
- 6.—Subsequent pancreatic disease.

PAPIN (Bordeaux): *Intervention in Acute Calculous Cholecystitis*. "Med. de Cher." Dec., 1921. 645-657.

THE comparison of the acute calculous gallbladder with the acute appendix is not absolutely justified. If the patient is not in the first attack, complications such as perforation and gangrene are much more rare and the infectious process is much more easily circumscribed. Generally speaking, one need not operate at the start of an acute cholecystitis, as one is obliged to do in appendicitis. If, on the other hand, the attack is a first one, with evident peritonitis, here the gallbladder is less likely to be walled off by older adhesions, and the surgical indications are clearer. Which is the more advisable, cholecystectomy or cholecystostomy? According to Papin, the main reason for

cholecystectomy *à chaud* is to be found in the role which is played by the gallbladder wall in the production of the more serious general phenomena, the wall being much more dangerous than the content. Here are to be found the miliary abscesses, the microbial foci where are manufactured the toxins, the source of general peritoneal and circulatory toxæmia. A further consideration is the anatomical condition of the gallbladder, as is also the general condition of the patient; either of these data will influence the indication for or against immediate removal of the acutely inflamed gallbladder. In the presence of dense adhesions, cholecystostomy is the wiser procedure.

HARTMANN, SMYTH AND WOOD: *Results of High Ligature of Cystic Duct in Cholecystectomy*. ("Ann. Surg." Feb., 1922. p. 203-207).

EXPERIMENTAL observations on 10 dogs gave the following conclusions:

1.—If, during cholecystectomy, a stump of any length be left on the cystic duct, this will dilate, and form a pseudo-gallbladder; pre-operative symptoms may thus reappear.

2.—If the cystic duct be ligated flush with the common duct, a general dilatation of the latter takes place, due to biliary hyper-tension.

3.—The gallbladder is not essential, but appears to function as a bile reservoir and to act as regulator of bile pressure.

4.—After cholecystectomy, nature strives to restore normal conditions in the biliary tract by dilatation of all the biliary passages, including the stump of the cystic duct.

Two clinical experiences confirm these experimental conclusions:—

(a) Patient with cholecystectomy in November, 1915, for non-calculous chronic cholecystitis. In February, 1916, right subcostal colic, vomiting and tenderness, without palpable tumour. September 16, new operation. Adhesions. No stone anywhere. At the site of the former gallbladder was found a small indurated mass, which, on incision, allowed bile and mucus to escape; a probe passed through this incision, went easily into the hepatic and common ducts. Drainage with recovery and cure.

(b). Male 60 years. Appendicectomy ten years previously, cholecystectomy, four years ago. Painful colicky attacks with vomit containing food ingested 12 to 16 hours earlier. Operation showed adhesions to stomach and colon; at the cystic duct stump was found a saccular dilatation four cms long. Incision, no stone, but a great quantity of bile. Ligation of cystic flush with common duct, and ablation of mass. Cure.

SENCERT, L. AND BLUM, P. (Strasburg): *Surgical Treatment of Obstruction of Large Arteries of the Limbs*. "Presse Méd." Oct. 4th, 1922.

ARTERIAL obstruction is classified as due to:—(1) spontaneous thrombosis. (2) thrombosis caused by trauma. (3) embolus.

1.—*Spontaneous Thrombosis*. The results of surgical treatment of

the obstruction due to spontaneous thrombosis are as a rule unsatisfactory. Occasional doubtful success has been ascribed to arterio-venous anastomosis. Roussiel (*Journ. de Chir.*, t. xiv., p. 258-267) has collected 52 cases in which this anastomosis was performed after gangrene had supervened; 50 failures occurred; in one case, operated by Ballance, the gangrene of the toes was arrested; in another (Davies) the great toe healed. In a second series of 11 cases where gangrene threatened or was incipient, five good results are claimed but these are not very convincing.

(2).—*Thrombosis due to Trauma.* The authors maintain that the rational treatment of this condition, if the lesion is not too extensive, is by longitudinal incision of the vessel, extraction of the clot and local lavage with five per cent. sodium citrate in aqueous solution. The lips of the incision are separated by traction sutures, and the intima is inspected; if it is healthy the vessel is closed; if not, the segment is resected, and either end-to-end suture is performed, or a venous graft is inserted. With slight trauma the artery may present no external sign of injury; the pulse, however, is absent below the lesion. In such cases Abadie's procedure of gentle massage (thrombotripsy) may be performed to disperse the clot. (*Bull. et Mém. de la Soc. de Chir.*, 1917, p. 345).

(3).—*Obstruction by Embolus* offers the best prospect of successful intervention. Diagnosis is based on the sudden pain, the disappearance of the peripheral pulse, and the coldness and loss of power in the limb.

The site of the obstruction is often difficult to determine: on account of the collateral circulation there is always a tendency to refer it to a point which is too peripheral. The seat of the initial pain, if it is definite, is a good localising sign. The surest sign, however, is the discovery of the point on the main vessel at which the pulse disappears. The clot is usually arrested at the bifurcation of a large trunk or where a large branch is given off. Up to 1911, seven operations had been performed for removal of emboli, the first by Sabanjeff in 1886. All were failures. In the same year the first success was secured by Labey in an embolism of the common femoral. Since then several brilliant results have been obtained by this operation, of which the authors record the most recent in a case of embolus of the axillary artery, originating in a small aneurysm of the same artery. The patient's age was 58: his Wassermann was positive. A supporting thread passed under the artery served to check hæmorrhage. A clot 8 c.m. in length was removed, and the artery was sutured. Contracture of the fingers occurred after operation, but disappeared in a few days. The cure has persisted now for six months. This case was operated within twenty-four hours after embolism. The intima appears to remain smooth for about this time, admitting of suture of the artery without resection.

A.K.H.

LENORMANT CH. : *Pulmonary Decortication in the Treatment of Chronic Pleurisy with Fistula*. "Presse Med." June 17, 1922.

THIS paper reviews the operative treatment of chronic empyema. Until 1911 statistics of results appeared to favour procedures which mobilised the chest wall. The method of resecting the thickened visceral pleura and mobilising the lung was proposed by Delorme in 1888. Since Tuffier pointed out that persistence of the empyemic cavity was due not only to mechanical causes but to the persistence of infection successes have multiplied.

Lenormant regards discortication as the operation of choice, but he insists (1) that operation must be performed early before the visceral pleura becomes incorporated with the lung. He takes persistence of infection and of the cavity as an indication to intervene, even if this period is shorter than the term of six weeks proposed by Tuffier.

(2) Before operation the pleural cavity must be disinfected as completely as possible; patients with a temperature should not be operated. Disinfection is secured by drainage and lavage with Carrel-Dakin solution (unless there is a bronchial fistula).

3. The thoracic wall must be respected at operation. Initial incisions should be intercostal extending the entire length of one space (*e.g.*, the fourth) and supplemented if necessary by resection of one or two ribs. With adequate retraction the pleura can then be explored from end to end. In order to liberate the apex a supplementary incision in the second space may be required.

Le Fort recommends intercostal incision, with division of as many costal cartilages as is necessary to secure wide retraction. A simple incision of one intercostal space permits separation of the ribs by about 6 c.m.; division of one costal cartilage above or below gives 8 c.m.; division of both cartilages, 12 c.m., and supplementary division of another cartilage, 19 c.m.

L. advocates a wide pneumopexy where this is possible. Cicatrization should be complete in from two to four months; expansion of the lung is more capricious, but even in cases where decortication is very difficult and incomplete, full expansion may occur. Operation is usually followed by a febrile reaction, and after by considerable oozing. Any suppuration should be treated by the Carrel-Dakin method. Respiratory exercises are of course essential in after-treatment.

A.K.H.

COLLECTIVE REVIEW OF RECENT LITERATURE ON GASTRODUODENAL PERFORATION.

ABSTRACTED BY WILLIAM DOOLIN.

THE question of resection in perforated gastric ulcers is becoming the order of the day in Continental literature and practice. In a paper of Brütt's (Hamburg) "Ztblt. F. Chir.," 1921, 38, 1378, abstracted

earlier in the year for this journal an account was given of eleven such cases so treated. That this method of treatment is interesting to other than German authorities, may be seen from the following abstracts.

UHLRICH "Revue de Chir." 1921. LIX. 7 and 8. Pp. 467-502 is of opinion that "for some years back, the limitations to a bolder and more radical surgery, *even in perforated ulcers* of stomach and duodenum, appear to have receded more and more, and that partial gastrectomy is tending to become the treatment of choice for certain perforated gastric ulcers." An analysis of 31 cases collected from the literature, German, French, and Italian, shows only three deaths in 31 published cases. For choice, the optimum period for the larger operation is in the earliest hours following perforation, before any infective peritonitic process has set in. The anatomical site of the perforation is of importance; the pyloric site facilitates resection; a duodenal site renders it much more difficult, though not impossible. A primary indication for resection is difficulty or impossibility of simple suture of the perforation area; the actual dimensions of the ulcer or the rigidity of its walls can in fact hinder or prevent its closure; there are thus certain cases where a resection is absolutely indicated, for want of any other satisfactory method of saving the patient. This has been the main reason which has actuated the majority of the surgeons who have undertaken the operation. The curative effect of gastro-pylorectomy is superior to that of simple suture in cases where circumstances and the patient's condition justify its being undertaken.

GANDUSIO ("Archivi Ital. di Chir." 1922, V., 216,) reports three cases of gastro-duodenal resection for perforated duodenal ulcers. All were operated on within two or three hours of perforation by resection of pylorus and duodenum, followed by terminolateral anastomosis (Kronlein-Miculicz). All succeeded without interruption of convalescence.

Details of cases :—

I.—Male, 26 years. Violent onset of epigastric pain at 8 p.m. Vomiting. Alcoholic drinks given to relieve pain. Entered hospital at 10 p.m. Good general condition, pulse 80, normal temperature, retracted abdomen. Stomach washed out. Immediate operation. Perforation on anterior wall of duodenum, one finger's breadth beyond pylorus, size of a lentil. Resection of 12 cm. Closure of duodenal stump, and terminolateral anastomosis. Cure.

II.—Male, 36 years. No antecedent gastric history. Sudden onset violent epigastric pain, three hours after meal, with nausea. No vomiting. General condition good. Pulse 64. Temperature 37.2. General abdominal retraction. Stomach washed out. Immediate operation. Perforation, 2 mm. diameter on anterior duodenal wall, 3 cm. from pylorus. Gastroduodenal resection 15 cm. long, plus anastomosis.

Copious hæmorrhage during operation. Repeated hæmatemesis, stopped by lavage. Rapid improvement, and uninterrupted convalescence.

III.—Male, 37 years. Several years previous dyspepsia. Patient had been for consultation that morning, and had received a testmeal. Sudden onset very violent epigastric pain 4 p.m. Entered hospital within the hour. Pulse 90. Temperature 36.88. General condition good. Diffuse abdominal pain, and slight meteorism. Operation. Stomach dilated and ptosed. Duodenal perforation 1 cm. from pylorus, 4 mm. diameter. Some few adhesions and enlarged glands. Pyloro-duodenal resection (13 cm.) and anastomosis. Cure. Left hospital on 15th day.

G., in conclusion, draws attention to the comparative ease of resection in these cases of acute perforation, where there were neither marked adhesions nor much callous induration.

HROMADA AND NEWMAN ("Surg., Gyn. and Obst." July, 1922. Pp. 11-18.)

FROM the Frankenhauß Wieden, at Vienna, put forward a cogently argued plea for this method of treatment also, and support their arguments with detailed histories of 19 cases so treated. Of these, in 10 the perforation was duodenal (one posterior), in three pyloric, and in six gastric; 14 were cured: five died; all were admitted to hospital with wide-spread acute peritonitis. In all cases resection of the stomach was done and more than two-thirds of the stomach was removed. (According to Viennese teaching, the most important condition for cure is limitation of secretion, hence wide resection is to be practised wherever possible) Duration of time between perforation and operation was from 1 to 36 hours. The best prognosis can be made in cases operated upon within the first 12 hours after operation. Meteorism is the factor most to be dreaded in influencing the operative result; extreme distension of the intestine contra-indicates the radical operation.

One case died of an unusual complication, thrombosis of the subclavian artery with subsequent gangrene of upper limb, after having fully recovered from the peritonitis. The stomach is always washed out; drainage is not used; wounds are closed primarily. On the strength of their experience, the authors recommend that "wherever possible, stomach resection be done in cases of gastric and duodenal ulceration, even in the presence of perforation and peritonitis."

EECGUIENNE, OF LIEGE, ("Bull et Mém. de Soc. de Chir." Paris, Sept., 1921. P. 349.) reports an acute perforation of a prepyloric ulcer in a man aged 60. Operation 4½ hours after onset of pain disclosed a perforation at the summit of a voluminous cancer mass. A wide gastropylorotomy was performed, with closure of both cut surfaces, and

posterior gastroenterostomy; following on a careful peritoneal cleansing, the abdomen was closed without drainage. The patient left hospital on 15th day, and, at time of reporting, five months after operation, was in satisfactory health.

HENRY (Montreal) in "Surg., Gyn. and Obst." June 1921. P. 542, reports a case of five successive gastric and jejunal perforations occurring in a single case, with five operations and recovery.

DUVAL PIERRE: *The Surgery of the Hemi-Thorax with Free Opening of One Pleural Cavity*. "Presse Méd." May 13, 1922.

Duval points out that on this subject there are two views which are diametrically opposed. According to one—the German—the pleura may be freely opened only if the negative intrapleural pressure is taken into account, and some form of differential apparatus used. The second view, which has been voiced in France since 1897 is that the problem of pulmonary surgery is solved by the freedom of action afforded to the surgeon by a complete unilateral pneumothorax.

Duval shows that the careful piece of experimental work by which Graham establishes the exact size of the greatest aperture in the chest wall which may safely be utilised is based upon a fallacy. Graham's work appeared to establish that the size of this opening must not in man exceed 5.5 square centimetres, but this measurement was deduced from experiments performed on dogs. In the dog, however, the two pleural sacs communicate, so that in the healthy animal it is impossible to produce a *unilateral* pneumothorax. It is interesting to note the number of distinguished observers (including John B. Murphy) who have based invalid conclusions upon the dog's pleura, conclusions which but for experience gained in the great war, and in the practice of artificial pneumothorax might indefinitely have checked the progress of thoracic surgery.

Duval next inquires why it is that while artificial pneumothorax proceeds without distress, yet a traumatic pneumothorax with an open pleura causes dyspnoea which if not arrested may become fatal. Occlusion of the breach in the thorax will at once put a stop to the distressed breathing. Thus it appears that a closed pneumothorax benign, while an open one may be dangerous. This danger is not, according to Duval, due to the "flapping of the mediastinum" produced by respiration; the mediastinum can be seen to "flap" in a closed pneumothorax which is without symptom. He believes that the real peril is the massive excursion of air within the pleural cavity, and that the distress is a reflex caused by stimulation of the pleural membrane. The intrapleural excursion of air may, then, be prevented in two ways (1). the pleura may be closed by occluding the orifice with sutures,

or, temporarily, with a swab or by drawing the lung into the breach ; or (2). *the lung may be made to collapse.* "The total collapse of the lung is essential in pulmonary surgery." The lung at once becomes manageable. It can be easily explored. It can be partially resected and wounds of its parenchyma can be sutured without the stitches tearing through. Duval in one case has successfully sutured six.

His method is to open the chest gradually by an intercostal incision or after wide resection of a rib. An incision of 2 c.m. is made in the pleura. After a few breaths the thorax is widely opened, and a strong retractor is inserted. The pneumothorax thus produced merely provokes a slight increase in the respiratory rhythm, accompanied by a slight fall in blood pressure. The retractor is then stretched to the full in order to immobilise the ribs and to make tense the diaphragm on the side of operation. This reduces to a minimum the respiratory movements on that side. The lung quits the thoracic wall but it still respire. It is surrounded with hot wipes moistened with saline at 40°C (104°F) and is progressively compressed until its movements stop. This manipulation must be carried out resolutely and with speed. Ventilation of the pleura then ceases, and Duval compares the trivial effect upon blood pressure of thoracotomy under these conditions with that of laparotomy.

Certain precautions must be observed. The lung must not be chilled ; the pleura must not too long be exposed to microbic invasion from the air : it must be protected by moist wipes, "but are these not routine procedures of general surgery"

In conclusion, Duval advocates the aspiration of the air which has entered the pleural cavity. The percentage of nitrogen which it contains rapidly increases to 88, and ten days are required for the absorption of two litres. During this period an effusion is liable to occur which needs removal. To obviate this slow resorption, Duval introduces a de Pezzer catheter into the wound which is completely closed. The catheter is then attached to a vacuum tube and after the air is withdrawn, the catheter is pulled out and the track occluded by a waiting suture.

A.K.H.

DELCHÉF, M.: *Congenital Elevation of the Scapula.* "Bulletin de L'Académie Royale des Médecine de Belgique."

ABOUT 150 cases have been reported during the last forty years of different degrees and varying pathology. The normal position of the scapula is between the upper border of the second rib and the lower border of the seventh. Elevation may be congenital or acquired, unie or bilateral. Sprengel in 1891 briefly described four cases, and suggested malposition of the arm during intra-uterine life as a cause, but several cases had been described before that, as far back as 1880. Friddon in Paris in 1904 published the first complete paper on the subject. He collected 84 cases from the literature up-to-date, and considered that

the malformation was of embryonic origin. In 1911 Bibergeil could only find eight cases of bilateral malformation in over a hundred published, and described a ninth. Up to 1914 operative interference was limited to resections and tenotomies, but in that way Kœnig described a method which sought to fix the scapula in the corrected position. Two conclusions emerge from a review of the published papers; our knowledge on the etiology of the affection is still uncertain, operation is by no means uniformly successful in curing the deformity. Frequently the size and shape of the scapula is abnormal. The vertical length of the scapula is frequently lessened and the superior angle is often curved forwards, so much so that it has been described as an exostosis, which by catching in the supraclavicular fossa, prevents the normal descent of the scapula. Rarely is the vertebral column normal in these cases, the abnormality varying from a scoliosis to malformation or non-development of the vertebral bodies and neural arches. About ten per cent of cases show a bony union between the scapula and the vertebral column, though supernumerary bony fragments are comparatively common and very variable in shape, size and position. When there is this bony union it is usually between the superior angle of the scapula and the spines of the lower cervical or first dorsal vertebrae. Changes in the neighbouring muscles are fairly common, deficiency, shortening or fibrous degeneration. Other malformations may be present, such as cervical ribs, congenital torticollis, incomplete development of upper or lower limb, or any of the ordinary congenital deformities, such as talipes, cleft palate, dislocation of the hip, etc. Cases are usually not brought to the surgeon's notice till they are between 12 and 16. The deformity is easily recognised on viewing the patient's back. The normal mobility of the scapula is absent, it may be possible to push it further upwards, but it cannot be moved downwards. As movements between humerus and scapula are normal, the arm can be raised to the horizontal, and under arm movements are normal, but as the scapula is more or less fixed, the arm cannot be raised much, if at all, above the horizontal, and overarm movements are impossible. Owing to the faint shadow thrown by the scapula and the medley of shadows caused by the ribs, x-ray examination does not give as much help as might be expected, either in showing changes in the shape of the scapula or the presence of supernumerary bars of bone. According to one theory the elevation is secondary, depending on mechanical or anatomical causes which prevent the normal descent of the scapula from its foetal position. According to the other theory the elevation is primary, the scapula being arrested in its development. According to the theory of Rosenberg it is analogous to non-ascension of one or both iliac bones, causing six lumbar vertebrae, and has the same significance as the presence of cervical ribs. Absence of the first rib with excessive descent to the scapula, if it occurred, would be analogous to sacralisation of the fifth lumbar vertebra. The term ectopia of the

scapula is suggested, instead of elevation of the scapula or Sprengel's disease, on the analogy of the similar non-descent of the testis.

Treatment by exercises and massage is useless, and operation is necessary when the malformation interferes with the use of the arm, or when the deformity is remarkable. Operative treatment consists in the removal of supernumerary pieces of bone, division of muscles or tenotomies, resection of the superior angles or other prominent part of the bone. Having lowered the scapula it must be kept in its new position for some time, this is best done by anchoring the inferior angle to a neighbouring vertebræ spine by kangaroo or reindeer tendon.

The author fully describes two cases operated on with successful results.

R. ATKINSON STONEY.

EMERSON, F. P. : *Perception Deafness*. Trans. Amer. Otolog. Soc., June, 1921.

WHEN we are asked to throw away all our old landmarks and traditions of knowledge, many of us tend to become reactionaries, temporarily at least, till convincing proof is forthcoming.

When, however, such proof is absent few will readily give up old theories for new.

Emerson holds that all deafness is toxic in origin and the result of damage to the internal ear perception apparatus. Whether the tympanic changes be profound or slight, their results (conduction deafness) are but the lesser of the factors promoting deafness.

He claims that all cases arise from a primary deep infection of the lymphoid tissues, that the deafness is not from the progress of this infection into the tympanum, but from the toxins generated. The toxins act on the perception apparatus, a condition of systemic toxæmia is established and some increased sensitiveness of the past determines the deafness. Continued or repeated attacks by the toxin lead to genuine auditory nerve damage.

Five picked cases (from a study extending over ten years) of deafness stated to have arisen from various pyogenic sources, *e.g.*, nose, sinuses epipharynx, etc., are set forth. Treatment was directed solely to the removal of infected lymphoid areas whether by operation or medication.

No inflation of the tympanum was practised, and excellent results as to the restoration of hearing are claimed. *

The discussion following this paper showed, even in its summarised form, that Emerson's conclusions were by no means accepted. Papers of this kind, even if not convincing, are valuable by keeping bright our old ideas, making us examine them to see if they withstand the attacks of new view points.

J.S.J.

TRANSACTIONS.

OF THE ROYAL ACADEMY OF MEDICINE IN IRELAND.

REPORT OF SESSION 1921-22.

DURING the Session 1921-1922 the Academy consisted of 177 Fellows, 8 Members and 20 Student Associates, numbers which are almost identical with those of the previous year.

The Accounts for the session have been audited, and the accompanying balance sheet shows the financial state of the Academy at the close of the Session. The income during the year amounted to £441 2s. 5d., and the expenditure to £365 7s. 4d., thus leaving a balance to be carried forward to the next Session of £75 15s. 1d.

PROFESSOR OSKAR FRANKL again visited Dublin during the year, and he generously accepted the invitation of the Council to lecture before the Academy. Two lectures were given, on April 25th and 27th, in the Theatre of the Royal College of Surgeons, and both were well attended. During Professor Frankl's visit the Council heard of the hardships to which medical men in Vienna were subjected in consequence of the finances of that country. So bad had things become that it was feared that owing to lack of funds the Medical Society of Vienna would have to close its library during the coming winter. Under these circumstances the Council decided to open a subscription among the Fellows and Members of the Academy : a sum of £45 10s. 6d. was collected and was sent as a donation to the Library from the Academy. For this gift the sincere thanks of the Society have been sent by its President, Professor Eiselsberg, its Treasurer, and Professor Frankl.

During the Session a permanent contract has been entered into with Messrs. Cahill for the publication of the Academy's Journal, and at a special meeting of the Academy, held on April 12, 1922, the title of the Journal was changed from THE DUBLIN JOURNAL OF MEDICAL SCIENCE to THE IRISH JOURNAL OF MEDICAL SCIENCE. Unfortunately, owing to the destruction of the premises of Messrs. Cahill by fire, the regular publication of the monthly numbers of the Journal has been somewhat interfered with, but it is hoped that this difficulty will be shortly overcome.

An important step has been taken by the establishment of an Obstetrical Research Committee in connection with the Section of Obstetrics and Gynæcology. It is proposed that this committee should prepare statistics and make collective investigations in connection with

this important branch of Medicine. Dr. Louis Cassidy Master of the Coombe Hospital, has been appointed Secretary of the Committee, and the Council has voted a sum of five guineas towards the expenses.

It is with sincere sorrow that the Council records the death during the Session of two valued Fellows of the Academy, Sir Joseph Redmond and Professor Edward Taylor. Joseph Michael Redmond was born in Dublin in 1853. He studied Medicine in the Carmichael and Catholic University Schools, and in 1876 was admitted a Licentiate of the Royal College of Surgeons. Two years later he was admitted Licentiate of the Royal College of Physicians, becoming a Member in 1881 and a Fellow in 1884. In 1890 he was admitted M.D. of Brussels, and in 1915 the National University of Ireland conferred on him the M.D. degree *honoris causa*. In 1906 he was elected President of the Royal College of Physicians, and he held that office for two years. In 1911 he received the honour of knighthood. During almost the whole of his professional career Dr. Redmond was connected with the Mater Misericordiæ Hospital, to which he was appointed Assistant Physician in 1879, and Physician in 1881. Dr. Redmond was one of the original Fellows of the Academy, and in 1907 and 1908 he was President of the Section of Medicine. Several communications by him have appeared in the Transactions. Sir Joseph Redmond died on November 25, 1921.

EDWARD HENRY TAYLOR graduated in Medicine and Surgery in the University of Dublin in 1890, and having won the Surgical Travelling Prize of his year, he spent some time in study at Vienna. On his return to Dublin he was appointed Assistant Surgeon to Sir Patrick Dun's Hospital, and a few years later he was made full Surgeon. In 1896 he became a Fellow of the Royal College of Surgeons in Ireland, of which he had been President for just two years at the time of his death. In 1907 he succeeded Edward Hallaran Bennett as Professor of Surgery in Trinity College, and nine years later he was appointed Regius Professor of Surgery in the University. For many years Professor Taylor was an active member of the Section of Surgery, of which he was President at the time of his death, and his published works on Surgery have added to the reputation of the Dublin School. Professor Taylor died on April 26, 1922.

The Council is glad to be able to record a continued progress of the Academy. During the Session 25 Sectional Meetings were held, at which the attendances were :—Fellows, 494 ; Members, 30 ; Student Associates, 164, and Visitors, 199.

LIST OF PERIODICALS AND PUBLICATIONS RECEIVED IN EXCHANGE FOR "IRISH JOURNAL OF MEDICAL SCIENCE,"

AMERICA :—

Southern Medicine and Surgery.
The Medical Record.
The American Journal of Insanity.
The New York Medical Journal.
The Journal of the American Medical Association.
The Archives of Pediatrics.
The Johns Hopkins Hospital Reports.
Cohio State University College of Medicine.
Asclepios Habana.
College of Physicians of Philadelphia.
New York Academy of Medicine.
American Journal of Medical Sciences.
American Journal of Obstetrics and Gynecology.
American Journal of Syphilis.
Archives of Diagnosis.
Medical Clinics of North America.

AUSTRALASIA :—

The Australasian Medical Gazette.
Medical Journal of Australia.
New Zealand Medical Journal.

BELGIUM :—

Bruxelles Medical.
Bulletin de l'Académie Royale Belgique.

CANADA :—

Canadian Medical Journal.
The Journal of the Canadian Medical Association.

DENMARK :—

Hospitals-Tidende.
Ugeskrift for Læger.

FRANCE :—

Archives Générales de Chirurgie.
Annales Médico-Psychologiques.
Bulletin de l'Académie de Médecine.
Gazette des Hôpitaux
La Presse Médicale

Revue Hebdomadaire de Laryngologie.

Lyon Médical.

Journal de Médecine de Bordeaux.

Revue de Chirurgie.

Revue de Laryngologie, d'Otologie et de Rhinologie.

GERMANY :—

Zentralblatt für Chirurgie.

GREAT BRITAIN :—

Proceedings of the Royal Society of Medicine.

The Edinburgh Medical Journal.

The Lancet.

The British Medical Journal.

The Journal of Mental Science.

The Glasgow Medical Journal.

The Practitioner.

The Journal of Anatomy and Physiology.

The British Journal of Dermatology.

The British Journal of Children's Diseases.

The Liverpool Medico-Chirurgical Journal.

Guy's Hospital Report.

British Journal of Ophthalmology.

Quarterly Journal of Medicine.

The Hospital.

British Journal of Tuberculosis.

Medical Science Abstracts and Reviews.

The Journal of Neurology and Psychopathology

INDIA :—

The Indian Medical Record

Indian Medical Gazette.

ITALY :—

Lo Sperimentale.

Archivio di Pathologia e Clinica Medica.

Archivodi orthopedia.

SCANDINAVIA :—

Acta Medica Scandinavica.

Acta Chirurgica Scandinavica.

NORWAY :—

Norsk Magazin for Laegevidenskaben.

Hygeia.

SWEDEN :—

Upsala Lakare forenings Forhandlingar.

SWITZERLAND :—

League of Red Cross Societies.

Revue Médicale de la Suisse Romande.

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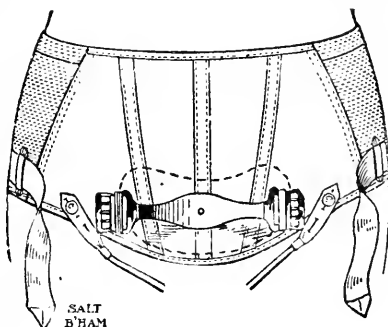
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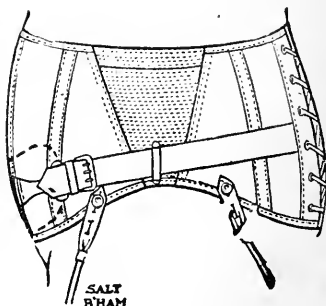
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